

**PARGASITE AND ILMENITE EXSOLUTION TEXTURE IN CLINOPYROXENE
FROM THE HUJIALING GARNET-PYROXENITE, SU-LU UHP TERRANE,
CENTRAL CHINA: A GEODYNAMIC IMPLICATION**

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Deep subduction of crustal material significantly affects the mantle convection and Earth dynamics, during this process a great amount of water and potassium are transported into the deep mantle, and affect the rheology of the upper mantle rocks (PEACOCK, 1990; ERNST, 2001; ZHANG & LIOU, 2001; ZHU & OGASAWARA, 2002). Some exsolution textures, formed during the exhumation stage of the subducted slab, are good indicators for ultrahigh pressure (UHP) metamorphism (e.g., LIOU et al., 1998). For example, the exsolution lamellae of quartz (e.g. SMITH, 1984) and garnet (e.g., SMYTH et al., 1989) in clinopyroxenes have been well documented in UHP eclogites.

We report here the discovery of amphibole exsolution texture from the Hujialing garnet-pyroxenites, which were exhumed from mantle together with coesite eclogites in the Su-Lu UHP metamorphic belt. The garnet-pyroxenite consists mainly of garnet and diopside with minor amounts of pargasitic amphibole, ilmenite, Mg-Al spinel, magnetite, tremolite, pyroxene, and olivine. Diopside contains abundant garnet inclusions as well as pargasite and ilmenite lamellae. The present mineral assemblages observed in the Hujialing garnet-pyroxenite indicate that the parental mineral of the reported exsolution texture should have a composition of the mixture of pargasite, ilmenite and diopside. The prevailing exsolution of pargasite (stage I) and ilmenite (stage II) suggests at least two-stages of exsolution processes, which implies a complex exhumation history for the Hujialing garnet-pyroxenites. The primary clinopyroxene in the Hujialing garnet-pyroxenite contains ~2000 ppm H₂O, indicating a peak metamorphic pressure of probably 80 kbar. The pargasite lamellae apparently formed earlier than the ilmenite lamellae in diopside, which indicated that the exhumation of such UHP metamorphic rocks happened in two steps, one at depths of ~100 km, another occurs at much shallower levels.

This work represents the Chinese Continental Scientific Drilling Project (2000409) & the National Science Foundation of China (40372024). The help of Zhu Y.-F. & Wei C.-J has greatly improved the manuscript.

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